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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Daniel J. Marchok

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EXAMINER

HO, DUC CHI

ART UNIT

PAPER NUMBER

2665

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/912,990

Applicant(s)

MARCHOK ET AL.

Examiner

Duc C Ho

Art Unit

2665

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2003.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 33-48 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 33 and 35-48 is/are rejected.
7) ☒ Claim(s) 34 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 112

1. Claims 33-48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 33, lines 4-7, recites "one unit responsive to at least one predetermined signal----- to align at least some of the transmitted data symbols with at least some of the received data symbols". Frames synchronization or symbols alignment at a receiver using a reference signal is known in the art, therefore, the recited limitation has failed to point out and distinctly define the subject matter that will be protected by the patent grant. The same remark applies to claims 38, 43, and 46.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(e) that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language .

3. Claims 43-48 are rejected under 35 U.S.C. 102(e) as being anticipated by Molnar et al. (U.S. 5,995,568), hereinafter referred to as Molnar.

Regarding claim 43, Molnar discloses a method and apparatus for performing frame synchronization in an Asymmetrical Digital Subscriber Line (ADSL) system. In Molnar, DMT frames or DMT symbols, figure 3, are to be transmitted in a time-

sequential manner. Frames synchronization or symbols alignment performed at the receiver, fig. 8, see col. 2, lines 28-48; col. 5, lines 8-32; and col. 7-line 47 to col. 9-line 18.

a transmitter (an ADSL system having a transceiver such as a transceiver 34-fig. 4, col. 5, lines 32-63) *of a predetermined signal* (the transceiver inherently transmits an training signal 82-fig. 8, see col. 7, lines 35-37); *and*

at least one unit (a receiver having a portion of a DMT receiver of the ADSL transceiver 34, fig. 5) *responsive to the predetermined signal to align at least some of the transmitted data symbols with at least some of the received data symbols* (the receiver responsive to the training signal 82-fig. 3 uses a time domain desired impulse response 84-fig. 8, a counter sequence 80, and a new count sequence 86-fig. 3 for aligning transmitted DMT symbols and received DMT symbols at the receiver, see col. 8, lines 31-33).

Regarding claim 44, since the training signal aims to produce a desired impulse response, see col. 3, lines 23-28, the training signal inherently includes an impulse signal at a transmission stage.

Regarding claim 45, Molnar's system comprises the DMT symbols.

Regarding claims 46-48, these claims have similar limitations as claims 43-45. Therefore, they are rejected under Molnar for the same reasons set forth in the rejection of claims 43-45, respectively.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 33, 35-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molnar, in view of Rinne (US 5,987,063).

Regarding claim 33, Molnar discloses a method and apparatus for performing frame synchronization in an Asymmetrical Digital Subscriber Line (ADSL) system. In Molnar, a training signal is transmitted from a transceiver of an ADSL system to a receiver having an ADSL transceiver 34-fig. 4, wherein a portion of DMT receiver-fig. 5 is used with various processed signals, fig. 8 for frame synchronization or symbols alignment.

Molnar, however, does not specifically teach adjusting the phase of at least some of the received data symbols to compensate for differences in the mixing frequencies.

One skill in the art would recognize the advantage of adjusting the phase of at least some of the received data symbols to compensate channel errors in digital data communication of a signal in sampled data form, such as errors, phase noise and frequency offset caused by multipath propagation in a digital data communication system, especially an OFDM system (Orthogonal Frequency Division Multiplexing).

Rinne discloses a method for compensating channel errors in a digital data communication system. In Rinne when OFDM symbols is relatively long, the phase varies notably during one symbol duration, the phase error must be compensated for received symbols, see fig. 3, col. 5, lines 11-55, and col. 3-line 6 to col. 4-line 64.

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to employ a mechanism for compensating phase error of the received symbols as taught by Rinne into the system of Molnar so that using a predetermined signal or a training signal as a reference, symbols alignment can be achieved in a OFDM or in a DMT digital communications system.

Regarding claim 35, Molnar system is capable of transmitting a pilot tone instead of a training signal for frame synchronization.

Regarding claim 36, since the training signal aims to produce a desired impulse response, see col. 3, lines 23-28, the training signal inherently includes an impulse signal at a transmission stage.

Regarding claim 37, Molnar's system comprises the DMT symbols.

Regarding claim 38, and 40-42, these claims have similar limitations as claims 33, 35-37. Therefore, they are rejected under Molnar-Rinne for the same reasons set forth in the rejection of claims 33, 35-37, respectively.

Regarding claim 39, please see the rejection of claim 38. Rinne taught rotating the phase for received symbols, see fig. 2.

Allowable subject matter

7. Claim 34 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gatherer et al.(US 6,044,107); Spruyt et al.(US 6,370,156); Marchok et al. (US 5,912,920); Tate et al. (US 6,353,636) are cited to show apparatus and method for symbol alignment in a multi-point OFDM/DMT digital communications system, which is considered pertinent to the claimed invention.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc Ho whose telephone number is (571) 272-3147. The examiner can normally be reached on Monday through Friday from 7:00 am to 3:30 pm.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (571) 272-3155.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2600.

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The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patent Examiner

A handwritten signature in black ink, appearing to read "Duc Ho", with a horizontal line extending to the right.

Duc Ho

10-06-04